



(43) International Publication Date
5 August 2004 (05.08.2004)

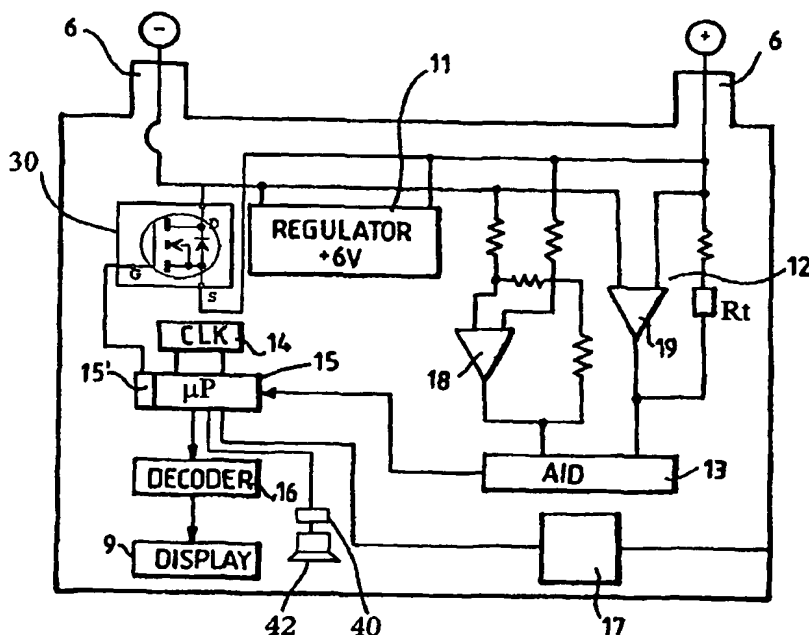
PCT

(10) International Publication Number
WO 2004/066413 A3

- (51) International Patent Classification⁷: **H01M**
- (21) International Application Number:
PCT/GB2004/000194
- (22) International Filing Date: 21 January 2004 (21.01.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
0301342.2 21 January 2003 (21.01.2003) GB
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- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:
— with international search report

[Continued on next page]

(54) Title: **CONDITION DETECTION AND INDICATING MEANS FOR A STORAGE BATTERY**



(57) Abstract: There is disclosed a storage battery which is capable of self-monitoring by detecting and indicating the actual capacity and the expected remaining life-span of the battery, the condition of its charging system and the discharge level. The battery is provided with an integrally assembled detection and indicating means which measure the actual potential across its terminal (indicative of the state of charge of the battery) and the internal resistance of the battery (indicative of its health). The expected remaining life-span of the battery is derived from the calculation of current from these measurements. The battery is assembled to include a casing (2), a cover (3) and a capacity detection and indicating means. The detection and indicating means consist of an electronic circuit that measures the electromotive force and the internal resistance of the battery and indicate the same on a display

means (9). The display means is adapted to exhibit whether the battery is in good working condition or otherwise during engine off or whether the charging system of the vehicle is in good working condition during engine in operation. Further, it could also monitor potential leakage presence in its electrical system.



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(88) **Date of publication of the international search report:**
2 December 2004

INTERNATIONAL SEARCH REPORT

International Application No
/GB2004/000194

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G01R31/36

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G01R

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 268 732 B1 (JONES BARBARA L ET AL) 31 July 2001 (2001-07-31)	1-14
Y	column 1, line 65 - column 4, line 12; figures 1,2	15-34
X	GB 2 328 288 A (SUN ELECTRIC UK LTD) 17 February 1999 (1999-02-17)	1-14
A	cited in the application page 11, line 24 - page 22, line 14; figures 1-16b	15-34
X	US 4 433 295 A (ZAUGG EDMOND) 21 February 1984 (1984-02-21)	1-14
A	column 1, line 48 - column 2, line 45; figures 1-3 column 5, line 23 - column 6, line 2	15-34
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

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- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- *Z* document member of the same patent family

Date of the actual completion of the international search

23 September 2004

Date of mailing of the international search report

05/10/2004

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INTERNATIONAL SEARCH REPORT

International Application No
/GB2004/000194

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 01/59443 A (MIDTRONICS INC) 16 August 2001 (2001-08-16) page 4, line 21 - page 15, line 24; figures 1-6	20-34
Y	WO 02/052672 A (INTELLIGENT BATTERY TECHNOLOGY ; KHOO TENG CHEOK (MY)) 4 July 2002 (2002-07-04)	15-19
A	page 8, line 16 - page 9, line 19	20-34
X	EP 0 762 135 A (SUN ELECTRIC UK LTD) 12 March 1997 (1997-03-12) column 3, line 29 - line 45; figures 2-4 column 6, line 1 - line 7	1-4,7,10

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB2004/000194

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

Continuation of Box II.2

The claims 35 and 36 of the present application do not comply with the regulations of the PCT because the reference made in these claims to the drawings is not admissible (Rule 6.2(a) PCT). Therefore no international search report has been established by the present International Search Authority on said claims (Article 17(2)(a)).

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

GB2004/000194

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